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(71) Applicant: KONICA CORP

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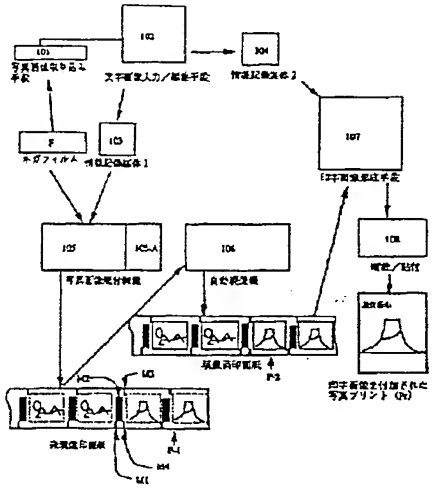
MANO SHIGERU

(54) IMAGE FORMING METHOD

(57) Abstract:

PURPOSE: To provide a image forming method capable of rapidly and surely recognizing positional relation and correspondence between a photographic image and a printing image in the case of adding the printing image to a photographic print by using a device which does not require too much space.

CONSTITUTION: In the image forming method by which the photographic image is printed on a photographic paper and is developed by a photographic image printing device 105, and the printing image is formed on the developed photographic paper by a printing device 107, the back surface of the photographic image or the nonimage part of the surface of the photographic image is marked, and printing is performed on the photographic image by the printing device 107 as making a mark a printing position reference point. The mark simultaneously includes the information of the printing position reference point and process controlling information. The non-image part of the photographing image surface of the photographic paper is marked by using a light emitting element.



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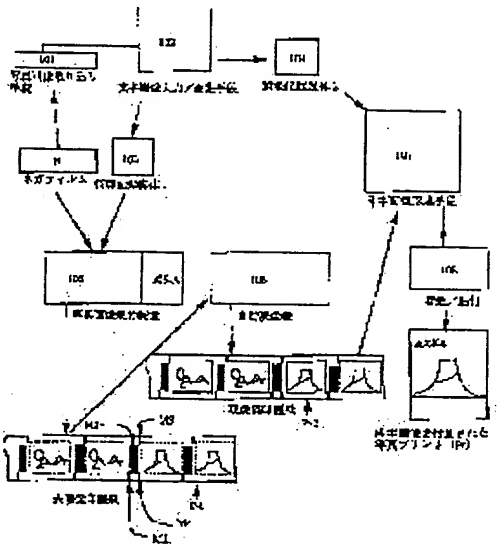

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CLAIMS

[Claim(s)]
[Claim 1] The image formation method that carry out printing ********** of the photograph with photograph printing equipment at printing paper, and mark on the non-picture portion of the rear face of a photograph, or a photograph side, and the aforementioned printer performs printing of a up to [a photograph] by making the aforementioned mark into a printing datum-reference point in the image formation method which forms a printing picture in this printing paper by which the development was carried out by the printer.
[Claim 2] The image formation method according to claim 1 that a mark according to claim 1 is characterized by including production control information simultaneously with the information on a printing datum-reference point.
[Claim 3] The image formation method according to claim 2 characterized by adding a mark according to claim 1 to the non-picture portion of the photograph side of printing paper using a light emitting device.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] this invention bakes a photograph on printing paper, and relates to the image formation method which forms printing pictures, such as a character and a figure, freely on a photoprint after development.
[0002]
[Description of the Prior Art] By the conventional method, with photograph printing equipment, while printing the photograph, the cut mark (hole punch or printing mark) used as the criteria position for cutting printing paper for every sheet was added. In the method of baking a photograph on printing paper and forming a printing picture on a photograph by the printer after development, it was considering as the printing datum-reference point using this cut mark.
[0003] By the way, since a photograph and a printing picture are formed at another process with the method of printing by the direct printer on the photograph of such a photoprint, it is necessary to take correspondence of a photograph and a printing picture. When this was performed visually, working hours became long and the rate of a check mistake was also high. It considers inputting the data corresponding to the order number on printing paper using a cut mark or a sorting mark, in order to perform this process quickly and certainly, and printing by comparing this data with the data corresponding to the order number in printing data.
[0004] However, in order to express data required for an order number check by the cut mark or the sorting mark on printing paper, a big area is needed and the futility of printing paper increases.
[0005] Moreover, when adding the data corresponding to an order number to printing paper using hole punch, it is necessary to repeat the process of conveyance-panties conveyance, and the speed in a printing process falls greatly. Although punch of ten is needed if it is going to make the hole for data (for example, 10 bits) at once, in having used the hole punch unit, an excessive space is not needed and desirable.
[0006]
[Objects of the Invention] In case the purpose of this invention adds a printing picture to a photoprint, it aims at offering the image formation method of performing recognizing the physical relationship of a photograph and a printing picture, and correspondence quickly and certainly using the equipment which does not require an excessive space.
[0007]
[Elements of the Invention] The above-mentioned purpose of this invention is attained by the following composition.
[0008] The image formation method that carry out printing ********** of the photograph with 1 and photograph printing equipment at printing paper, and mark on the non-picture portion of the rear face of a photograph, or a photograph side, and the aforementioned printer performs printing of a up to [a photograph] by making the aforementioned mark into a printing datum-reference point in the image formation method which forms a printing picture in this printing paper by which the development was carried out by the printer.
[0009] The image formation method of one aforementioned publication that the mark of 2 and one aforementioned publication is characterized by including production control information simultaneously with the information on a printing datum-reference point.

[0010] The image formation method of two aforementioned publication characterized by adding the mark of 3 and one aforementioned publication to the non-picture portion of the photograph side of printing paper using a light emitting device.
[0011]
[Function] In invention according to claim 1, in case a printing picture is added on a photograph, the mark added to the non-picture portion of the rear face of a photograph or a photograph side at the process which prints the photograph on a negative film on printing paper can be made into printing datum reference, and a printing picture can be added.
[0012] In invention according to claim 2, a mark according to claim 1 besides the printing datum-reference information on printing Order information, The printing information which shows the trimming situation at the time of the ability of the photograph on a film to be printed on printing paper, exposure conditions, etc., Moreover, it is characterized by including production control information, such as development information which shows the development conditions when developing the printing paper which printing of this photograph finished, and correspondence with a photograph and a printing picture can be certainly taken now by this.
[0013] In invention of a claim 3, since mark addition is made by using a light emitting device as an addition means of the aforementioned mark in the narrow zone on printing paper, there is no futility of printing paper and a mark can be added with the equipment which moreover does not need excessive space.
[0014]
[Example] Although an example is given and this invention is explained in detail hereafter, the mode of this invention is not limited to this.
[0015] Hereafter, the example of this invention is explained in detail based on an accompanying drawing. Drawing 1 is the example of a process of the formation method of the photograph which added the printing picture.
[0016] The photograph on a negative film (F) is incorporated for character picture input / edit means (102) with a picture incorporation means (101), and printing image data, order information, and printing information are inputted. Furthermore the printing picture position on a photograph is adjusted, and all these data are stored in the information record media 1 (103) and 2 (104). Photograph printing equipment (105) is equipped with the information record medium 1 (103), and it prints the photograph on a negative film (F) on printing paper based on the order information in this information record medium 1 (103), and printing information. In this case, a printing datum-reference mark (M1), a production control information mark (M2), a cut mark (M3), and a sorting mark (M4) are added to the non-printing portion of a printing paper rear face or a photograph side by the mark addition means (105-A) equipped in photograph printing equipment (105).
[0017] You may include all information about processing of the photograph which is applicable, such as order information, printing information, and development information, in a production control information mark (M2).
[0018] In this way, the printing paper (P-1) in which the production control information mark (M2) was added non-developed negatives is developed by the auto-processor (106), and turns into printing paper (P-2) developed negatives.
[0019] This printing paper (P-2) developed negatives is attached in a printing image formation means (107) by which the information record medium 2 (104) was attached. The order information in the information record medium 2 (104) and the order information under production control information mark (M2) previously added on printing paper are read. Printing image data with the order information which is in agreement with the order information on this production control information mark (M2) is taken out out of the information record medium 2 (104), and a printing picture is added on printing paper (P-2) developed negatives.
[0020] In this way, the made printing paper to which the printing picture was added developed negatives is attached in a cutter (108), one-sheet cutting of one sheet is performed based on a cut mark (M3), and arrangement for every order is performed based on a sorting mark (M4). When there is the need for attachment, it sticks before cutting.
[0021] The photoprint (Pr) to which the printing picture was added is completed through an above-mentioned process.

[0022] An above-mentioned example is further explained to a detail.
[0023] As a photograph incorporation means (101), as long as a scanner, a video camera, etc. can input a graphic picture, for example, what thing may be used.
[0024] As a character picture input / edit means (102), as the input section, it consists of a keyboard, a mouse, a scanner, etc., and the software for edit is used as an edit means.
[0025] A keyboard and a mouse are used also for operation of this software, and actual edit is performed on a display. Moreover, control of these input [all] / edit meanses is performed by CPU.
[0026] As long as the information record media 1 and 2 (103 104) which memorize printing image data, order information, and the printing information about a photograph are the memory apparatus which can transmit information between each equipment under CPU management of an optical disk, a hard disk, a PUROPPI disk, CD-ROM, an IC card, etc., what thing is sufficient as them. An interface should just use the thing suitable for each memory apparatus.
[0027] Although the information record media 1 and 2 (103,104) which have the printing information about printing image data, order data, and a photograph are created when input and edit are performed with character picture input / edit means, even if the content of these information record media 1 and 2 (103,104) is the same, there may be. [no] However, order information and printing information need to be included in the information record medium 1 (103), and order information and printing image data need to be contained in the information record medium 2 (104) at least at least.
[0028] Moreover, it is desirable to perform simultaneously the writing of the various information on two information record media in an input once, and, thereby, it can reduce the input mistake in character picture input / edit means as much as possible.
[0029] Furthermore, the information inputted into two information record media may be inputted into one information record medium, and the number of information record media may be reduced.
[0030] Next, the method of addition of the production control information mark (M2) in photograph printing equipment (105) is described. For example, as shown in drawing 2 , an exposure system is prepared in the printing frame of photograph printing equipment (105) (equivalent to 105A of a Light Emitting Diode lamp / drawing 1 in this example), based on the production control information on the information record medium 1 (103), Light Emitting Diode of the digit which converts an order number (displayed in decimal digits) and printing information into a binary digit, and corresponds is made to emit light, and a mark is added on printing paper.
[0031] Since addition of this production control information mark (M2) is performed simultaneously with the exposure for printing the photograph on a negative film (F) on printing paper, there is almost no time loss for this mark addition.
[0032] When addition of a printing datum-reference mark (M1), a cut mark (M3), and a sorting mark (M4) also makes the corresponding point of Light Emitting Diode emit light, it is carried out simultaneously with addition of a production control information mark (M2).
[0033] Moreover, since a mark with a width of face [of 0.5mm] and a length of about 2-4mm forms one production control information mark (M2) by about ten - about twenty, it just needs to occupy space with a width of face [of 10-50mm], and a length of about 2-4mm, and can embed enough into the non-photograph portion on the printing paper formed with old standard photograph printing equipment.
[0034] Moreover, since the exposure system used for mark formation is only somewhat larger than a mark, it is the size which can be inserted in the baking frame in photograph formation equipment (105), and does not need an excessive space. Although a mark field is limited to the non-picture section of a photograph side when performing mark addition using an exposure system, if it equips with small melting type hot printing equipment in photograph printing equipment (105), a mark of the same kind can be added also to a printing paper rear face in addition to the non-picture section of a photograph side. It is performed as follows when performing mark addition using melting type hot printing equipment.
[0035] Instead of the mark addition means mentioned above, as shown in drawing 4 , a thermal head is arranged, and a mark is added.
[0036] If addition of a mark makes eye a possible hatchet and a mark addition place a printing paper rear face at the printing paper rear face in adding a mark using melting type hot printing, even if the

mark remains in the photoprint (Pr) after decision, there is no quality top problem, and process information can be checked easily behind.
[0037] The recording density of the thermal head used for this mark addition has the desirable thing of 100 or more dpi.
[0038] Moreover, when adding a mark to printing paper using melting type hot printing, it is desirable to use the ink ribbon which has the color-material layer of the resin system binder which is excellent in scratch-proof nature in consideration of next handling nature.
[0039] When the mark was added to the printing paper rear face and the photoprint (Pr) was created using this mark using the thermal head arranged in the ink ribbon obtained by <<prescription A>> specifically shown below as shown in drawing 4 , there is also no lack of a mark and the print which corresponded was obtained.
[0040]
<<prescription A>>
Base : Toray Industries Application liquid prescription stratum disjunctum for 4.5-micrometer stratum disjunctum in 5AF531 (it has heat-resistant layer at tooth back) thickness : **** chemistry CE-101 (polyethylene wax) 95 % of the weight Mitsui E. I. du Pont de Nemours EV-210 (EVA) 5 % of the weight Solvent : Toluene application liquid concentration: -- application liquid prescription ink layer for 10-% of the weight ink layers: -- Kanebo NSC YODOZORU GD903 (styrene acrylic copolymer) 10 % of the weight Nippon Junyaku JURIMA FC-30 (acrylic copolymer) 70 % of the weight Carbon black 20 % of the weight Solvent : Water 50 % of the weight 50 % of the weight of isopropyl alcohol Application liquid concentration: On the 20-% of the weight base, the wire bar was used, the application liquid for stratum disjunctum was applied, it dried for 30 seconds at 70 degrees C, and the stratum disjunctum of 0.4 micrometers of dryness thickness was obtained.
[0041] Next, the wire bar was used, the application liquid for ink layers was applied on above-mentioned stratum disjunctum, it dried for 60 seconds at 70 degrees C, the ink layer of 1.5 micrometers of dryness thickness was obtained, it was with this ink sheet, and the mark was added.
[0042] Moreover, since the timing of addition, the number of addition marks and a size, the size of the additional equipment, etc. are made like the case where the addition means of an above-mentioned exposure system is used, they can have all the advantages at the time of using the equipment of an exposure system with them.
[0043] Furthermore, it is not necessary to restrict to the two above-mentioned sorts as a mark addition means, and what method may be used as long as it is methods which can be outputted to the non-picture portion of the photograph side of printing paper, and the rear face of printing paper by making into a picture the data which received the digital data and received, such as a sublimated type hot printing method and an impact method.
[0044] Next, a printing image formation process is described.
[0045] A printing image formation means (107) consists of a heat transfer printer (107-A) and a host computer (107-B), as shown in drawing 6 .
[0046] If it equips with the information record medium 2 (104) which includes printing image information and order information in a host computer (107-B) at least and printing instructions are given, a host computer (107-B) will pass printing instructions to a heat transfer printer (107-A). If a heat transfer printer (107-A) uses the sensor for detection (S) and the sorting mark (M4) and cut mark (M3) on printing paper are detected simultaneously, it will begin to scan a production control information mark (M2). Returning 0 to a host computer (107-B), when a mark is detected and it does not detect 1, a host computer (107-B) takes out printing image information with the order information which is in agreement with order information (for example, order number) among the information expressed by the returned production control information mark (M2) out of the information record medium 2 (104), and outputs printing image information to a heat transfer printer (107-A).
[0047] After a heat transfer printer (107-A) finishes detection of a production control information mark (M2), it detects a printing datum-reference mark (M1), and outputs printing image information to the place specified by the printing position data in the printing image information from a host computer (107-B) with two as the starting point of the edges (for example, left end) of this printing datum-reference mark (M1) and printing paper. And the output of a printing picture is continued for

the output of the same printing image data with two as the starting point of the edges of a printing datum-reference mark (M1) and printing paper until it next detects a cut mark and a sorting mark simultaneously.

[0048] As a heat transfer printer (107-A), a melting type heat transfer printer, a sublimated type heat transfer printer, and an energization imprint printer can be used.

[0049] Moreover, a printing image formation means (107) is not restricted to a heat transfer printer, but may use an ink jet printer and an electrostatic recording printer.

[0050] Finally a cutting process is explained.

[0051] The printing paper in which printing image information was added is sent to a cutter (108), and the photoprint (Pr) to which it ****ed on the basis of the already given cut mark (M3), and the printing picture was added completes it.

[0052]

[Effect of the Invention] According to the formation method of the photograph with a printing picture by this invention, since a mark can be once added by processing (exposure or heating) at the time of the printing process of a photograph, various information can be added without the loss of time on printing paper.

[0053] Since a mark can be added using the equipment which does not occupy excessive space, the unit for mark addition can be attached also in existing photograph printing equipment comparatively easily, and versatility increases in it.

[0054] Moreover, surely, in case printing image information is outputted, in order to check correspondence with a photograph, correspondence of a printing picture and a photograph can be taken certainly.

[0055] Moreover, the photoprint (Pr) which gave the production control data mark (M2) to the photograph rear face does not have a problem in quality, in a photoprint (Pr) remain [production control data], and it can check production control data easily behind.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is drawing having shown the example of a process of this invention simple.
[Drawing 2] It is the plan of the printing frame which attached the aligner of this invention.
[Drawing 3] It is the plan of the printing paper to which the mark was added by the aligner of this invention non-developed negatives.
[Drawing 4] It is the plan of the printing frame which attached the thermal head of this invention.
[Drawing 5] It is the plan of the printing paper to which the mark was added with the hot printing equipment of this invention non-developed negatives.
[Drawing 6] It is the heat transfer printer as printing image formation equipment and the block diagram of a host computer showing an example of this invention.
[Description of Notations]
101 Photograph Incorporation Means
102 Character Picture Input / Edit Means
103 Information Record Medium 1
104 Information Record Medium 2
105 Photograph Printing Equipment
105-A Mark addition means
106 Auto-processor
107 Printing Image Formation Means
107-A Heat transfer printer
107-B Host computer
108 Cutting/Pasting Equipment
P-1 Printing paper non-developed [exposed] negatives
P-2 Printing paper developed [which developed P-1] negatives
M1 Printing datum-reference mark
M2 Production control information mark
M3 Cut mark
M4 Sorting mark
Pr Photoprint to which the printing picture was added

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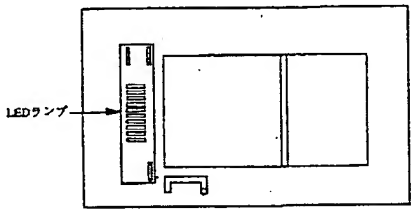
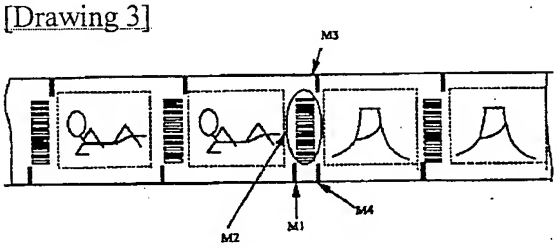
DRAWINGS

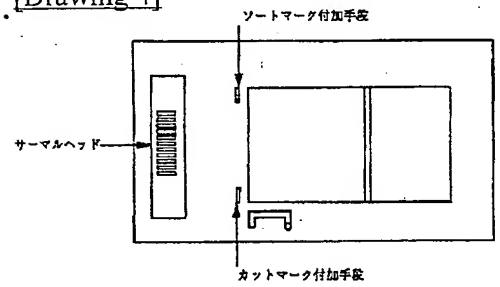
[Drawing 2]



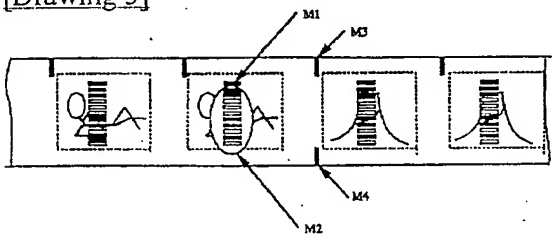
[Drawing 3]



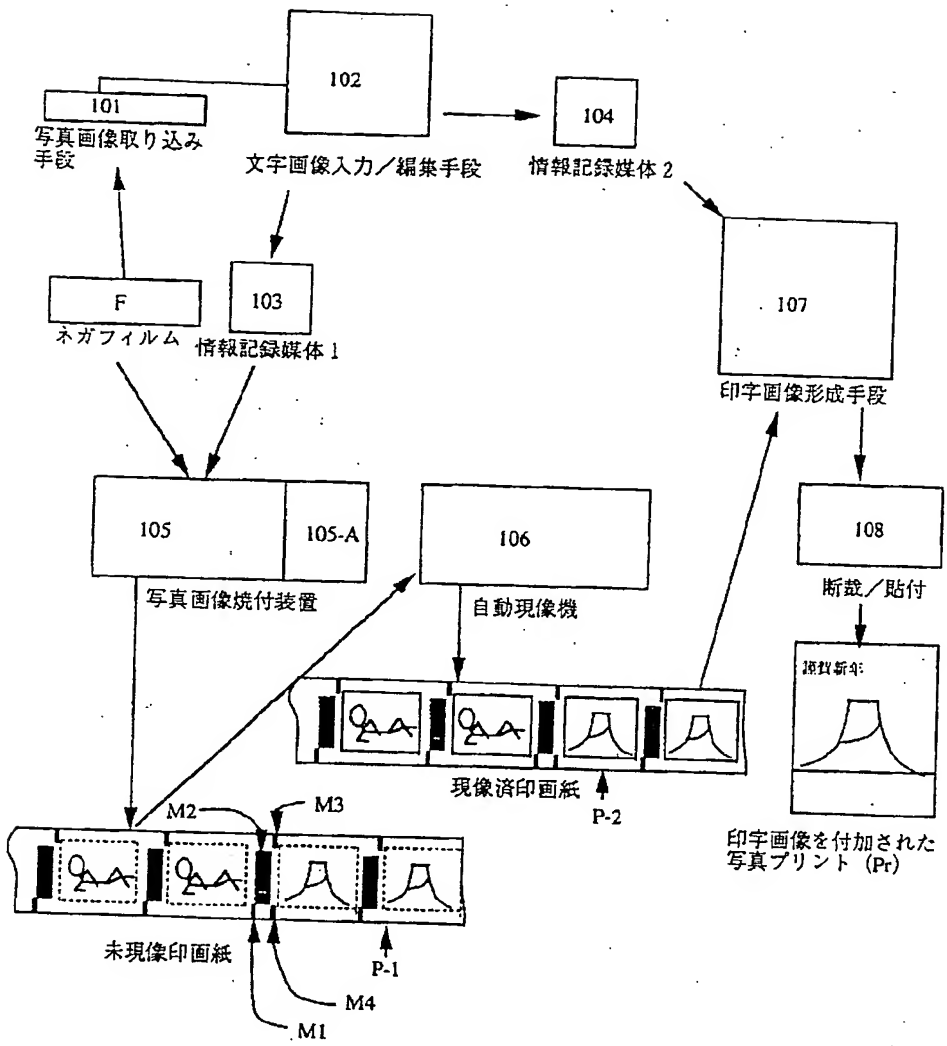
[Drawing 4]



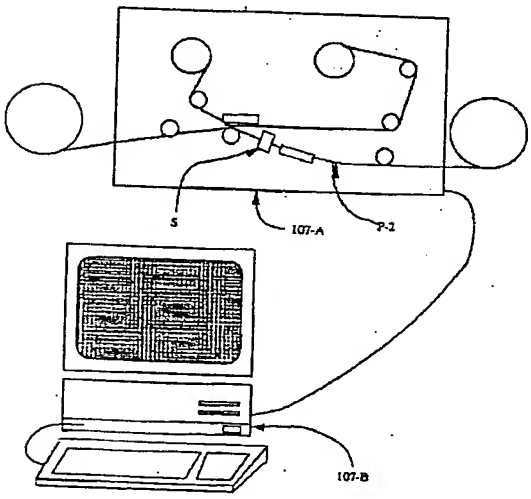
[Drawing 5]



[Drawing 1]



[Drawing 6]



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